



Caterina Sforza defended cities and hoarded alchemical secrets in the fifteenth century.

HISTORY

Women at the edge of science

Jennifer Rampling assesses a study of the Renaissance women who dared to tackle alchemy's secrets.

Renaissance Italy had no female Galileo, but it did have Margherita Sarrocchi, a poet and avid student of mathematics, hailed by her contemporaries as a “marvel of the female sex”. Seven of her letters to Galileo survive, along with one of his replies — relics

of a correspondence in which Sarrocchi sought Galileo's opinion on her epic poem *Scanderbeide*, in return for her comments on his scientific work. We can only guess what form those comments might have taken. Sarrocchi's poem survives, but although her

Daughters of Alchemy: Women and Scientific Culture in Early Modern Italy

MEREDITH K. RAY
Harvard Univ. Press:
2015.

interest in geometry, astronomy and natural philosophy is widely attested, none of her work in these fields remains. The gap raises a question that resonates well beyond

early modern Italy: how can we recover women's scientific knowledge, when even such an exceptional figure as Sarrocchi left no book for us to read?

In *Daughters of Alchemy*, professor of Italian Meredith Ray seeks an answer in unexpected places: in women's poetry, letters, recipe collections, literary debates and alchemy. In early modern Europe, alchemy was pursued as both a branch of natural philosophy and a body of craft knowledge. This practical, vernacular dimension made it accessible to sixteenth- and seventeenth-century women at all levels of society. It is a world opened up in recent years by scholarship including Tara Nummedal's work on the sixteenth-century German alchemist Anna Zieglerin, and Alisha Rankin's *Panacea's Daughters* (University of Chicago Press, 2013), on medical practice among German noblewomen. In it, women won alchemical patronage, tested and traded recipes, and adopted alchemical techniques such as distillation to prepare medicines, perfumes and transmuting elixirs.

Daughters of Alchemy brings together a series of case studies, beginning with the remarkable figure of Caterina Sforza, a noblewoman whose power bases were the northern Italian cities of Imola and Forlì. Sforza achieved lasting fame, and a mention in Niccolò Machiavelli's 1532 *The Prince*, for her defence of Forlì's citadel against the army of Cesare Borgia. As Ray shows, she also practised alchemy, using her knowledge of “secrets” as social capital. Sforza's *Experiments* was not intended for print, but was passed in manuscript to her son as a family heirloom. Later, the publishers of printed “books of secrets” sought to evoke the same sense of privileged, empirical knowledge. Indeed, the only female-authored book on nature from the time to become a best-seller, the 1561 *Secrets of Signora Isabella Cortese*, seems to have been written by a man seeking to exploit the rising market for women's secrets; Cortese is, after all, an anagram of *secreto*.

Women's associations with alchemy and secrecy, Ray argues, helped to carve out space in a wider literary arena. We encounter the Venetian poets Moderata Fonte and Lucrezia Marinella, who portrayed powerful female magi in their epic verse, and discussed science within an ongoing debate about the place of women in society. However, although Ray's basic claim is sound, she sometimes overstates the alchemical content of these works. When a character

in Fonte's dialogue *The Worth of Women* (1600) describes the interchangeability of the elements, she invokes a basic tenet of Aristotelian natural philosophy — not, as Ray suggests, a process “essentially alchemical in nature.” Nor is it necessary to implicate the heterodox medical reformer Paracelsus in the commonplace image of the human body as a “little world”. Fonte does innovate by proposing science as an area in which women can excel, but her actual views on natural philosophy seem to be mainstream.

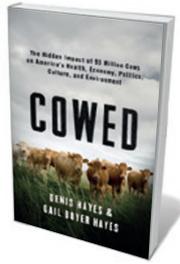
Fonte's orthodoxy contrasts with the attitude of another exceptional woman: Camilla Erculiani, an apothecary whose *Letters on Natural Philosophy* (1584) combined original scientific views (including a natural explanation for the biblical flood) with a staunch defence of women's intellectual capacity. Both author and practitioner, Erculiani sent her book to Poland for publication, armed with a dedication to the Polish queen, Anna Jagiellon. Yet even Krakow was not far enough away for her to escape the attention of the Inquisition. Humiliatingly, at her trial one of Erculiani's supporters used her sex to excuse her unorthodox reading of scripture — arguing that, as a woman, she could scarcely be held to know what she was talking about.

Female authors struggled to establish themselves as natural philosophers. Yet, Ray shows us, they could still make their voices heard as women, whether marketing women's secrets or defending their sex from slander. And they were effective. When Giuseppe Passi launched a misogynistic attack, *The Defects of Women* (1599), Marinella swiftly responded with her own book, *The Nobility and Excellence of Women and the Defects and Vice of Men* (1600). Among his jibes, Passi claimed that women could not ‘do’ science. Marinella out-argued him point by point. Eventually Passi backed off, retracting his more extreme views. Their exchange attracted an audience, and the books were reprinted.

We can learn from this exchange. Marinella's treatise did not extend the boundaries of scientific knowledge, but that was not its aim. Such defences were important because they created an arena for women's voices. By writing about science, Renaissance women argued that they were qualified to write about science. Although they could not emulate Galileo in obtaining university posts, or seek roles as court philosophers, they could and did contribute to Renaissance scientific culture in other ways: as experimenters, readers, commentators, correspondents and critics. In sixteenth-century Europe, as in Ray's timely book, alchemy offered one way into a much larger conversation. ■

Jennifer Rampling is assistant professor of history at Princeton University in New Jersey, where she teaches the history of alchemy. e-mail: rampling@princeton.edu

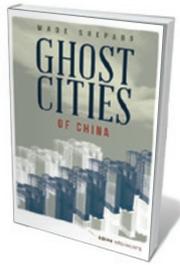
Books in brief



Cowed: The Hidden Impact of 93 Million Cows on America's Health, Economy, Politics, Culture, and Environment

Denis Hayes and Gail Boyer Hayes W. W. NORTON (2015)

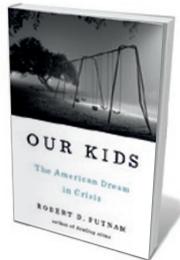
Scattered among the 319 million US citizens are 93 million cows, supplying milk, beef and raw materials for substances from paint to toothpaste. But at a price: ruined soils, lagoons of excrement and significant greenhouse-gas emissions. So argue environmentalist Denis Hayes and environmental lawyer Gail Boyer Hayes in this richly researched overview. Marshalling numerous case studies, they show how humanity could shift from industrial farming to scaled-down, scientifically backed, sustainable animal husbandry.



Ghost Cities of China: The Story of Cities without People in the World's Most Populated Country

Wade Shepard ZED (2015)

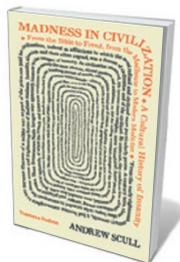
In 1949, China boasted 69 cities; now there are 657. Staggering in scale and set to churn on for 20 years, this experiment in urbanization is leaving a forlorn legacy: ghost towns that have yet to see an inhabitant. In this succinct study of a country bulldozed to make way for generic conurbations, *China Chronicle* editor Wade Shepard dispenses the facts with chilling clarity. As he examines mountains literally moved, relocation on a gargantuan scale and the duplication of Hallstatt, Austria, in Guangdong province, a stunned awe sets in.



Our Kids: The American Dream in Crisis

Robert D. Putnam SIMON AND SCHUSTER (2015)

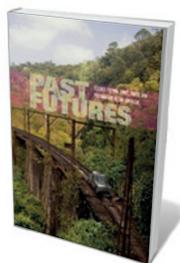
Political scientist Robert Putnam's *Bowling Alone* (Simon and Schuster, 2000) exposed the increasing fragmentation of US communities. Now Putnam takes on the erosion of social mobility — once the keystone of the American dream. Meshing quantitative data and interviews with young people from the Deep South to the Rust Belt, he explores the class gap and finds that the vicious cycles of economic poverty often lead to political disengagement and lack of access to knowledge. His solutions, such as child tax benefits, inspire — but could founder without 1960s-style reformist zeal.



Madness in Civilization: A Cultural History of Insanity, from the Bible to Freud, from the Madhouse to Modern Medicine

Andrew Scull THAMES & HUDSON (2015)

In this ambitious chronicle of mental illness over two millennia, historian of psychiatry Andrew Scull ranges over the jumbled landscape of “Unreason” with crisp authority. His central argument is that the social and cultural contexts of extreme emotional states “dwarf any single set of meanings and practices”. Insights jostle with horrors as Scull documents attempts to explain, contain and treat madness, from brutal asylums and lobotomies to the nuanced realization that mental illness has dual roots in society and biology.



Past Futures: Science Fiction, Space Travel, and Postwar Art of the Americas

Edited by Sarah J. Montross BOWDOIN/THE MIT PRESS (2015)

The science-fiction boom, cold war and space race of the mid-twentieth century set off a scientific and cultural explosion. Artists across the Americas discovered an alien splendour in the atomic age. This gripping volume showcases curator Sarah Montross's exhibition at Bowdoin College Museum of Art in Brunswick, Maine: from the cataclysmic (Rufino Tamayo's 1954 *Cosmic Terror*) to the rhythmic (Emilio Renart's 1965 *Drawing No. 13*), it is a revelation. **Barbara Kiser**